



STATE OF COLORADO

CLASS SERIES DESCRIPTION

July 1, 2002

CIVIL ENGINEERING PROJECT MANAGEMENT

I5C1** TO I5C2**

Specialty Areas

A. Construction B. Pre-construction C. Other

DESCRIPTION OF OCCUPATIONAL WORK

This class series uses two levels in the Physical Sciences and Engineering Occupational Group and describes civil engineering project management work in the design and/or construction of buildings, highways, bridges, tunnels, dams, utilities, or other structures. The work involves planning, directing, controlling, coordinating, or evaluating all aspects of approved and budgeted projects. The work includes the management of the project team or oversight of all related contractors, sub-contractors, or consultants. The work may also include the budgetary and contract compliance responsibilities as the "designee" for the agency.

Some work in this class meets the definition of "the practice of engineering", but does not require a Professional Engineer's (P.E.) license as all engineering work is directly supervised by a licensed, registered Professional Engineer. This meets the requirement of CRS 12-25-102 et. seq., and supporting board rules. These classes are distinguished from the Professional Engineer classes which require licensing with its attendant liability and may include stamping (seal) or approving engineering designs, plans, orders, or other engineering documents. This class series is distinguished from the Construction Inspector and Engineering/Physical Science Technician classes as those classes do not describe oversight and administration of complete engineering projects.

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CIVIL ENGINEERING PROJECT MANAGER I

I5C1**

CONCEPT OF CLASS

This class describes the operational project manager. Positions in this level oversee all aspects of civil engineering projects within one of the project phases, i.e., pre-construction or construction. Positions review the requirements, needs, and limitations for the project, and then plan the processes needed to accomplish the project management, in terms of human, fiscal, material, and equipment or facility resources. Positions prepare and/or review preliminary plans, estimates, surveys, collected data, existing contracts, and previous engineering documents. Positions plan subordinates' work assignments, schedules, and reporting requirements. They then oversee or plan the programming or distribution of funds and the manpower and equipment needs for completion of the project. This class also describes positions functioning as assistant project managers on larger projects and as full project manager on smaller, less complex projects.

During engineering project activities, positions monitor time lines and fund expenditures to control both within the project master schedule. The position directs the review and resolution of issues, problems, or delays. Through periodic assessments and reports, project managers keep their supervisors and managers apprised of progress and problems. The project manager is the focal point for resolving all changes or deviations by contractors/consultants from plans, schedules, programs, contracts, criteria, specifications, etc. The project manager reviews, and approves for payment, verifications of contractor or consultant-provided services and materials. Positions review and validate all reports, logs, and forms related to project activities.

Prior to project completion, positions review all plans, forms, ledgers, and reports to confirm that all project items are complete. Projects are then presented for approval, and either released for bid or submitted for final pay-out and acceptance.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making -- The decisions regularly made are at the process level, as described here. Within limits set by professional civil engineering standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. For example, positions decide the processes of managing projects from initiation to bid or close-out in terms of schedules, phase points, sequences, resources needed, change authorizations, etc. The general pattern, program, or system exists but must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, in conjunction with agency project guidelines, positions examine design problems and decide which design principles will solve these problems. New processes or objectives

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require approval of higher management or the agency with authority and accountability for the program or system.

Complexity -- The nature of, and need for, analysis and judgment is patterned, as described here. Positions study project engineering information, requests, reports, or change orders to determine what it means and how it fits together in order to get practical solutions in the form of completed design or construction work. Guidelines in the form of standards, specifications, procedures, etc., exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, positions select engineering specifications for changing construction methods when unpredicted foundation problems occur, or may need to re-write specifications due to design changes.

Purpose of Contact -- Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of clarifying underlying rationale, intent, and motive by educating others on unfamiliar design or construction concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. As an example, positions explain the intent and rationale behind construction project plans or designs to contractor or consultant personnel.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a work leader. The work leader is partially accountable for the work product of two or more full-time equivalent positions, including timeliness, correctness, and soundness. (Note: Two FTE of "project-recurring" positions may be substituted for one of the two FTE required.) At least one of the subordinate positions must be in the Engineering or Physical Science Assistant or Technician classes or in a class at a comparable conceptual level. Typical elements of direct control over other positions by a work leader include assigning tasks, monitoring progress and work flow, checking the product, scheduling work, and establishing work standards. The work leader provides input into supervisory decisions made at higher levels, including signing leave requests and approving work hours. This level may include positions performing supervisory elements that do not fully meet the criteria for the next level in this factor.

OR

Positions which do not meet the supervisory requirements in the above paragraph, may be placed in this class if they meet the concept and factors for this class, provided, the Complexity factor is evaluated at the Formulative level.

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CIVIL ENGINEERING PROJECT MANAGER II

I5C2**

CONCEPT OF CLASS

This class describes the full project manager as a unit supervisor. Positions in this level oversee all aspects of civil engineering projects within one of the project phases, i.e., pre-construction or construction, or sometimes both phases. In addition to the work described by the Project Manager I class, positions in this class have responsibility for decisions which impact the pay, status, or tenure of subordinates. This class also describes positions which are full-time project managers and have a tradeoff for lower levels of supervisory responsibility but with a higher level of Complexity (refer the section under Line/Staff Authority for the use of this class under these circumstances). The tradeoff feature in this class is not used for positions functioning primarily as assistant project managers. This class differs from the Civil Engineering Project Manager I class in Line/Staff Authority factor and may also differ in the Complexity factor.

FACTORS

Allocation must be based on meeting all of the four factors as described below.

Decision Making -- The decisions regularly made are at the process level, as described here. Within limits set by professional civil engineering standards, the agency's available technology and resources, and program objectives and regulations established by a higher management level, choices involve determining the process, including designing the set of operations. For example, positions decide the processes of managing projects from initiation to bid or close-out in terms of schedules, phase points, sequences, resources needed, change authorizations, etc. The general pattern, program, or system exists but must be individualized. This individualization requires analysis of data that is complicated. Analysis is breaking the problem or case into parts, examining these parts, and reaching conclusions that result in processes. This examination requires the application of known and established theory, principles, conceptual models, professional standards, and precedents in order to determine their relationship to the problem. For example, in conjunction with agency project guidelines, positions examine design problems and decide which design principles will solve these problems. New processes or objectives require approval of higher management or the agency with authority and accountability for the program or system.

Complexity -- The nature of, and need for, analysis and judgment is patterned, as described here. Positions study project engineering information, requests, reports, or change orders to determine what it means and how it fits together in order to get practical solutions in the form of completed design or construction work. Guidelines in the form of standards, specifications, procedures, etc., exist for most situations. Judgment is needed in locating and selecting the most appropriate of these guidelines which may change for varying circumstances as the task is repeated. This selection and interpretation of guidelines involves choosing from alternatives where all are correct but one is better than another depending on the given circumstances of the situation. For example, positions select engineering specifications for changing construction methods when

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unpredicted foundation problems occur, or may need to re-write specifications due to design changes.

OR

The nature of, and need for, analysis and judgment is formulative, as described here. Positions evaluate the relevance and importance of engineering or construction management theories, concepts, and principles in order to tailor them to develop a different approach or tactical plan to fit specific circumstances. While general policy, precedent, or non-specific practices exist, they are inadequate so they are relevant only through approximation or analogy. In conjunction with theories, concepts, and principles, positions use judgment and resourcefulness in tailoring the existing guidelines so they can be applied to particular circumstances and to deal with emergencies. For example, positions adapt design principles to fit unique terrain or geologic formations to complete project plans.

Purpose of Contact -- Regular work contacts with others outside the supervisory chain, regardless of the method of communication, are for the purpose of clarifying underlying rationale, intent, and motive by educating others on unfamiliar design or construction concepts and theories. This goes beyond what has been learned in training or repeating information that is available in another format. As an example, positions explain the intent and rationale behind construction project plans or designs to contractor or consultant personnel.

Line/Staff Authority -- The direct field of influence the work of a position has on the organization is as a unit supervisor. The unit supervisor is accountable, including signature authority, for actions and decisions that directly impact the pay, status, and tenure of three or more full-time equivalent positions. (Note: Two or more FTE of "project-recurring" positions may be substituted for one of the three FTE.) Positions supervised must be in the Engineering or Physical Science Assistant or Technician classes; or in a class at a comparable conceptual level. The elements of formal supervision must include providing documentation to support recommended corrective and disciplinary actions, signing performance plans and appraisals, and resolving informal grievances. Positions start the hiring process, interview applicants, and recommend hire, promotion, or transfer.

OR

Positions which do not meet the supervisory requirements in the above paragraph, may be placed in this class if they meet the concept and factors for this class, provided, the Complexity factor is evaluated at the Formulative level.

DEFINITIONS

Construction: That part of an engineering project following bid award through project completion and final pay-out.

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Pre-construction: That part of an engineering project from formal approval through planning and design up to and including, bid award.

Other: A combination of the above parts of an engineering project; or project parts as defined and approved by the Department of Personnel Total Compensation/Systems Unit.

Designated Project: As it applies to the Department of Transportation, it is a segment of work that has been budgeted and approved as a project by the Transportation Commission and is included in the agency 5-year plan. Other agencies may have other means of formally designating projects.

ENTRANCE REQUIREMENTS

Minimum entry requirements and general competencies for classes in this series are contained in the State of Colorado Department of Personnel & Administration web site.

For purposes of the Americans with Disabilities Act, the essential functions of specific positions are identified in the position description questionnaires and job analyses.

CLASS SERIES HISTORY

Effective 7/1/02 (DLF). PSE System Maintenance Study. No changes. Published as proposed 5/15/02.

Effective 11/1/94 (DLF). Published as proposed 9/15/94.

Effective 9/1/93 (DLF). Job Evaluation System Revision project. Published as proposed 6/11/93 .

SUMMARY OF FACTOR RATINGS

Class Level	Decision Making	Complexity	Purpose of Contact	Line/Staff Authority
C. E. Project Manager I	Process	Patterned	Clarify	Work Leader *
C. E. Project Manager II	Process	Patterned or Formulative	Clarify	Unit Supervisor *

* Note: Tradeoff exists; see factor definition for guidance.

ISSUING AUTHORITY: Colorado Department of Personnel & Administration